

CLAIMS

The invention claimed is:

1. A mounting apparatus for an optical element, comprising:
an inner mount;
an outer mount, the inner mount being connected to the outer mount via three circumferentially distributed articulations; and
manipulators configured to act on the articulations, wherein said inner mount is displaceable, and wherein the articulations comprise a mechanism which transforms a radial movement into an axial movement.

2. The apparatus as claimed in claim 1, wherein said mechanism comprises at least one lever for transforming the radial movement into an axial movement, wherein said manipulators act on said at least one lever.

3. The apparatus as claimed in claim 2, wherein said mechanism comprises at least one bell crank lever with attachment points between said inner mount and said outer mount and being located in the region of the outer ends of a first lever of said at least one crank lever, and said manipulators acting in the region of the outer end of a second lever of said at least one crank lever which is in an angle to said first lever of said at least one crank lever.

4. The apparatus as claimed in claim 3, wherein said first and said second lever of said at least one crank lever are perpendicular to each other.

5. The apparatus as claimed in claim 2, wherein said lever of said mechanism changes the transmission proportion of said transfer from radial movement to axial movement.

6. The apparatus as claimed in claim 5, wherein said lever of said mechanism is located outside of the geometry of said inner mount and of said outer mount resulting in a greater force to said inner mount.

7. The apparatus as claimed in claim 1, wherein said articulations are built up from separate parts.

8. The apparatus as claimed in claim 1, further comprising sensors provided for position determination of said inner mount.

9. The apparatus as claimed in claim 8, wherein said sensors are designed as capacitive sensors.

10. The apparatus as claimed in claim 1, wherein said manipulators provided are hydraulic or pneumatic actuating members.

11. The apparatus as claimed in claim 1, wherein said manipulators provided are mechanical actuating members.

12. The apparatus as claimed in claim 1, wherein said manipulators provided are electrical actuating members.

13. The apparatus as claimed in claim 1, wherein said manipulators for the individual articulations can be actuated separately in each case.

14. A mounting apparatus for mounting a lens in a projection lens system for semiconductor lithography, comprising:

an inner mount;

an outer mount, the inner mount being connected to the outer mount via three circumferentially distributed articulations; and

manipulators configured to act on the articulations, wherein said inner mount is displaceable, and wherein the articulations comprise a mechanism which transforms a radial movement into an axial movement.

15. The apparatus as claimed in claim 14, wherein said mechanism comprises at least one lever for transforming the radial movement into an axial movement, wherein said manipulators act on said at least one lever.

16. The apparatus as claimed in claim 15, wherein said mechanism comprises at least one bell crank lever with attachment points between said inner mount and said outer mount being located in the region of the outer ends of a first lever of said at least one crank lever, and said manipulators acting in the region of the outer end of a second lever of said at least one crank lever which is in an angle to said first lever of said at least one crank lever.

17. The apparatus as claimed in claim 16, wherein said first and said second lever of said at least one crank lever are perpendicular to each other.

18. The apparatus as claimed in claim 14, wherein said manipulators for said individual articulations can be actuated separately in each case.

19. The apparatus as claimed in claim 14, further comprising sensors provided for position determination of the inner mount.

20. The apparatus as claimed in claim 19, wherein said sensors are designed as capacitive sensors.

21. The apparatus as claimed in claim 14, wherein said manipulators provided are hydraulic or pneumatic actuating members.

22. The apparatus as claimed in claim 14, wherein said manipulators provided are mechanical actuating members.

23. The apparatus as claimed in claim 14, wherein said manipulators provided are electrical actuating members.

24. A mounting apparatus for an optical element, comprising:
an outer mount;
an inner mount arranged within said outer mount;
an optical element being adapted to said inner mount; and
at least three articulations circumferentially arranged around said inner mount and between said inner mount and said outer mount, wherein each of said at least three articulations comprise a mechanism which transforms a radial movement into an axial movement.

25. The mounting apparatus of claim 24, wherein said manipulators provide a direction of force which is perpendicular to said axial movement.

26. The apparatus as claimed in claim 24, wherein said mechanism comprises at least one lever for transforming the radial movement into the axial movement, wherein said manipulators act on said at least one lever.

27. The apparatus as claimed in claim 24, wherein said mechanism comprises at least one bell crank lever with attachment points between said inner mount and said outer mount being located in the region of the outer ends of a first lever of said at least one crank lever, and said manipulators acting in the region of the outer end of a second lever of said at least one crank lever which is in an angle to said first lever of said at least one crank lever.

28. The apparatus as claimed in claim 27, wherein said first and said second lever of said at least one crank lever are perpendicular to each other.

29. The apparatus as claimed in claim 24, further comprising sensors provided for position determination of the inner mount.

30. The apparatus as claimed in claim 29, wherein said sensors are designed as capacitive sensors.

31. The apparatus as claimed in claim 24, wherein said manipulators provided are hydraulic or pneumatic actuating members.

32. The apparatus as claimed in claim 24, wherein said manipulators provided are mechanical actuating members.

33. The apparatus as claimed in claim 24, wherein said manipulators provided are electrical actuating members.

34. A mounting apparatus for mounting a lens in a projection lens system for semiconductor lithography, comprising:

an outer mount;
an inner mount arranged within said outer mount;
an optical element being adapted to said inner mount; and
at least three articulations circumferentially arranged around said inner mount and between said inner mount and said outer mount, wherein each of said at least three articulations comprise a mechanism which transforms a radial movement into an axial movement.

35. The mounting apparatus of claim 34, wherein said manipulators providing a direction of force which is perpendicular to said axial movement.

36. The apparatus as claimed in claim 34, wherein said mechanism comprises at least one lever for transforming the radial movement into an axial movement, wherein said manipulators act on said at least one lever.

37. The apparatus as claimed in claim 36, wherein said mechanism comprises at least one bell crank lever with attachment points between said inner mount and said outer mount being located in the region of the outer ends of a first lever of said at least one crank lever, and said manipulators acting in the region of the outer end of a second lever of said at least one crank lever which is in an angle to said first lever of said at least one crank lever.

38. The apparatus as claimed in claim 34, wherein said first and said second lever of said at least one crank lever are perpendicular to each other.

39. The apparatus as claimed in claim 34, further comprising sensors provided for position determination of the inner mount.

40. The apparatus as claimed in claim 39, wherein the sensors are designed as capacitive sensors.

41. The apparatus as claimed in claim 34, wherein the manipulators provided are hydraulic or pneumatic actuating members.

42. The apparatus as claimed in claim 34, wherein the manipulators provided are mechanical actuating members.

43. The apparatus as claimed in claim 34, wherein the manipulators provided are electrical actuating members.

44. The apparatus as claimed in claim 36, wherein said lever of said mechanism changes the transmission proportion of said transfer from radial movement to axial movement.

45. The apparatus as claimed in claim 44, wherein said lever of said mechanism is located outside of the geometry of said inner mount and of said outer mount resulting in a greater force to said inner mount.